

On the Eigenvalue problem involving the Robin $p(x)$ -Laplacian

Lubega Mohamxnad and Martin Karuhanga

Kampala International University, Uganda.

Mbarara University of Science and Technology, Uganda.

A nonlinear eigenvalue problem with Robin boundary conditions on a bounded domain is investigated. The existence of a sequence of non-negative eigenvalues is established using the Ljusternik-Shnirelmann principle. Using the variational principle, we also prove that there exists a principal eigenvalue which is the smallest of all the eigenvalues and that the set of eigenvalues is not closed.

Keywords: Eigenvalues; $p(x)$ -Laplacian; Ljusternik-Shnirelmann principle; Variational principle.